Spartan Scout

Program Description

The SPARTAN ACTD responds to the growing challenge posed by asymmetric, non-conventional and terrorist threats. Joint Vision 2020 (JV2020) states:

"By developing and using approaches that avoid US strengths and exploit potential vulnerabilities using significantly different methods of operation, adversaries will attempt to create conditions that effectively delay, deter, or counter the application of US military capabilities.

"The potential of such asymmetric approaches is perhaps the most serious danger the United States faces in the immediate future …"

As evidenced by the attack on the USS COLE (DDG 67), there is an urgent need to address force protection issues of our Naval assets including Carrier Battle Groups (CVBGs), Surface Action Groups (SAGs), and Military Sealift ships. These vessels are increasingly vulnerable to asymmetric threats (submarines, small patrol boats, missiles, mines, special operations forces (SOF), etc.) in the littorals during transits through chokepoints and while conducting in-port and/or near-shore operations. The Fleet is further hampered by the lack of an accurate common tactical picture for threats above and below the sea surface. The undersea warfare (USW) picture is even more difficult to obtain because of the depth restrictions on submarines, the threat of asymmetric or land-based (e.g., small boats, SOF, missiles) attack on surface ship platforms, and the poor acoustic conditions in the littorals. Thus, there is a strong need to develop an intelligence, surveillance, and reconnaissance (ISR) capability that provides an accurate picture of the battlespace above and below the sea surface to support a wide range of military operations from war to peacekeeping, counter-drug and humanitarian. Using lethal and non-lethal weapons payloads in conjunction with speed and numbers, the SPARTAN unmanned surface vessels (USVs) are also ideal platforms to probe intent

of potential threats (e.g. small boats) and provide an unmanned interdiction capability.

The overall objective of this Advanced Concept Technology Demonstration (ACTD) is to demonstrate and assess the military utility, and provide preliminary concepts of operation for SPARTAN to support the warfighters in assured access and force protection in the littorals, and fill a void in capability that the Fleet and other forward deployed forces are in critical need of today. This ACTD will develop fieldable SPARTAN Scout prototypes that consist of a core system and warfighting modules on a seven-meter RHIB (Rigid Hull Inflatable Boat). Modules will be developed for USW, ISR and force protection/precision strike (FP/PS).

SPARTAN will provide the following benefits to warfighters:

- Extended threat (surface and subsurface) detection range;
- Minimization or elimination of unnecessary risk to personnel and capital assets – provides a defensive barrier;
- Cost effective asset for port/harbor protection;
- Force leveler/multiplier; and
- Freeing of assets currently used for ISR, USW, etc… to perform other missions.

Concept of Operations and Technical Approach

SPARTAN is an integrated sensor and weapon system and a primary force leveler against asymmetric threats that enable the battleforce commander to match inexpensive threats with an appropriate response. As a low-cost force multiplier, USVs provide increased sensor coverage in a net-centric environment and enable rapid establishment of battlespace dominance.

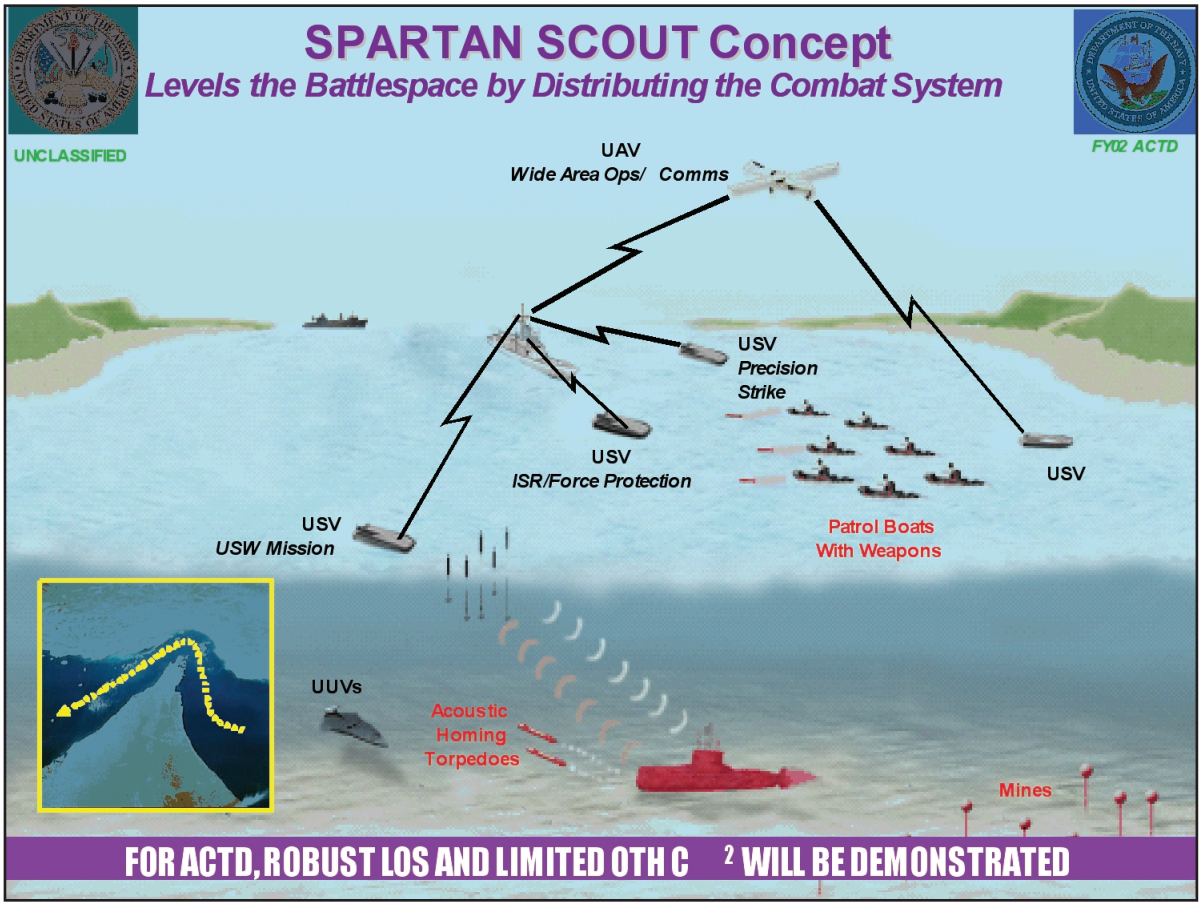

Figure 9-37: SPARTAN Scout Concept

The SPARTAN concept consists of seven- and eleven-meter rigid-hull inflatable boats (RHIB). The core system, which is considered the common "truck" for all mission payloads, includes the boat, remote controlled/semi-autonomous command decision system, self-health monitoring system, basic ISR suite (RADAR, video/infrared (IR) camera, etc.), navigation system, and communications. The communications system will use tactical common data link (TCDL) systems to provide seamless integration into existing communications networks. Control is achieved in line-of-sight (LOS) mode by ship, helicopter, or ground station or over-the-horizon (OTH) mode by UAV, or another USV. Satellite and low probability of intercept (LPI) communications are also possibilities. Each SPARTAN platform can be configured with one of several separate mission modules. An ISR module may include video/infrared cameras, laser ranging/targeting systems, explosive detection, and chemical/biological agent detection equipment. The USW module may include an AQS-14/20 side-scan sonar for USW, bottomed-submarine detection, or ocean bottom mapping. Weapons (e.g. guns, torpedoes, missiles, etc.) will eventually be integrated to provide greater defensive and offensive capability supporting force protection and precision strike.

The steps toward demonstrating and evaluating the utilities of SPARTAN Scout accomplished under the ACTD are as follows:

a. Employ spiral development methods to fabricate a semi-autonomous/remote control, modular, mission-reconfigurable, unmanned surface vehicle (USV) based on integration of COTS/GOTS systems and subsystems into a seven-meter Navy RHIB
   1. Modularize COTS seven-meter RHIB to accept a single mission module.
   2. Integrate Core System remote control and situational awareness sensors
   3. Develop USV C2 subsystem (Command Decision System (CDS))

b. Develop and Integrate Mission Modules for mine warfare (MIW), ISR, and FP/PS
   1. Develop USW (MIW) module based on AN/AQS-20X minehunting sonar (use existing AN/AQS-14 for initial development and risk mitigation) for use by surface combatants (destroyers (DDGs), cruisers (CGs), and frigates (FFGs)).
   2. Develop ISR module using commercial-off-the-shelf (COTS)/ Government-off-the-shelf (GOTS) FLIR/CCD video with stabilization platform, RADAR, EO/IR or Chemical/Biological detection subsystems.
   3. Develop FP/PS Module which integrates a weapon system (gun and/or missile system) into the ISR module specified in b.2.

c. Demonstrate incremental development efforts in periodic experimentation (such as Fleet and Joint Battle Experiments, etc.) using CONOPS and scenarios developed by the Operational Manager (OM). Incorporate assessment results and lessons learned into follow-on development. Use results of major mission demonstrations as decision points for technology transition to acquisition.

d. Explore joint operational and technical concepts with Army UAVs.

e. Provide residuals to designated operational users and transition support for the period of two years. The Technical Manager (TM) and Operational Manager (OM) will develop and plan for the user training necessary for safe employment and maintenance of the SPARTAN system.

Program Status

In FY02, Integrated Product Teams (IPTs) and Working Groups (WGs) are being established to support program execution and technical development of the SPARTAN ACTD deliverables. The schedule for ACTD development and demonstration is provided in Figure 9-38.

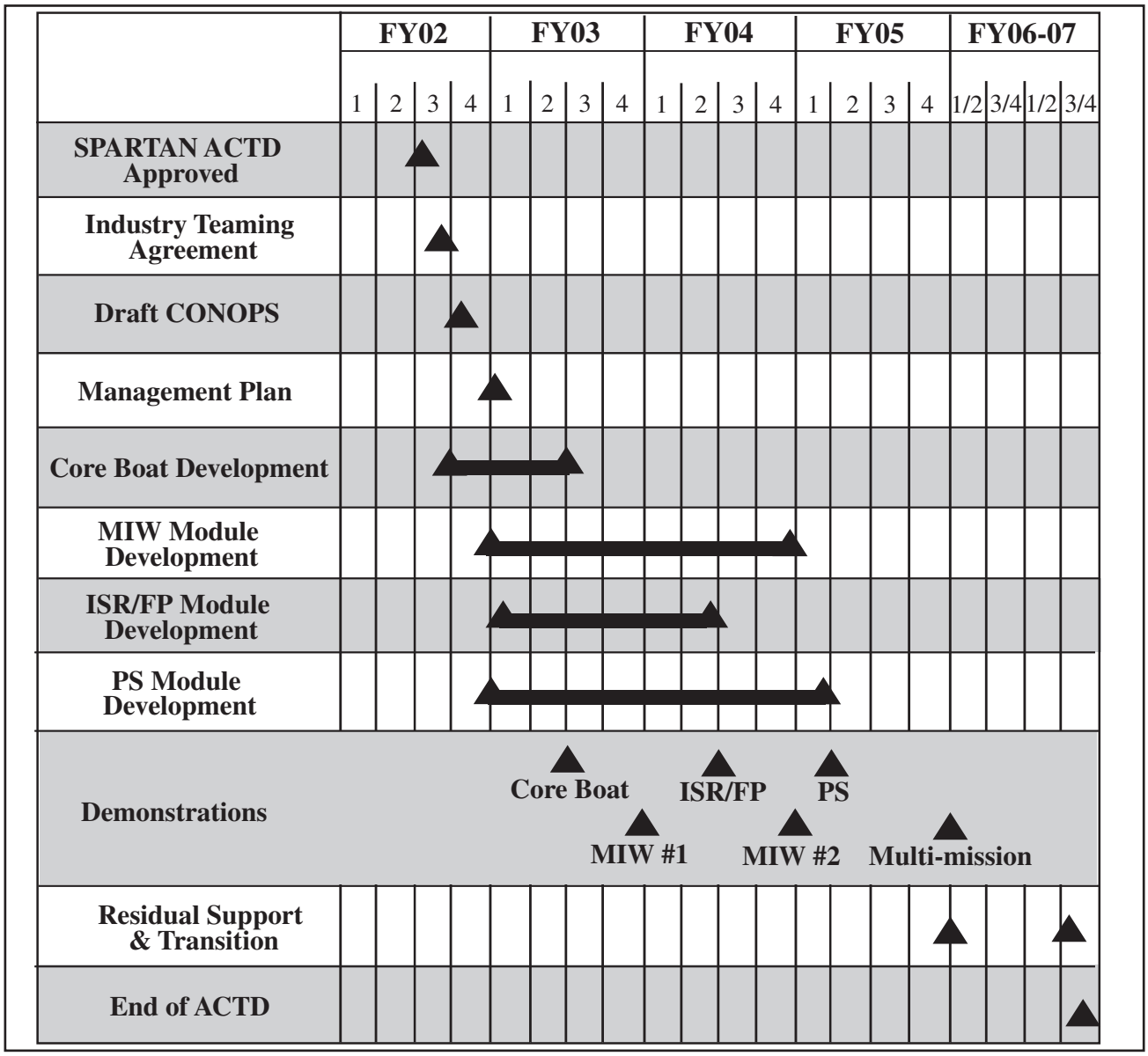

Figure 9-38: SPARTAN Scout ACTD Schedule

The SPARTAN Scout ACTD technical approach is designed to allow a smooth and rapid transition of developed capabilities onto existing surface ships. The initial focus of the transition strategy is to deploy SPARTAN systems on all surface combatants including DDGs, CGs, and FFGs equipped with the AN/SQQ-89 combat system.

Program Management

The organizational structure for the SPARTAN ACTD, shown in Figure 9-39, provides:

- Visibility into and control over SPARTAN ACTD planning and execution by an Executive Oversight Panel

- Review of program status and progress by a Program Management Group
- Technical Management (TM) by Naval Undersea Warfare Center (NUWC)
- Operational Management (OM) by COMTHIRDFLEET
- Transition Management (XM) by NUWC (Temporary until Acquisition Office Assigned)
- Detailed program development and transition activities by Integrated Product Teams
- Program participation by selected PACOM components, Army components, and the Republic of Singapore

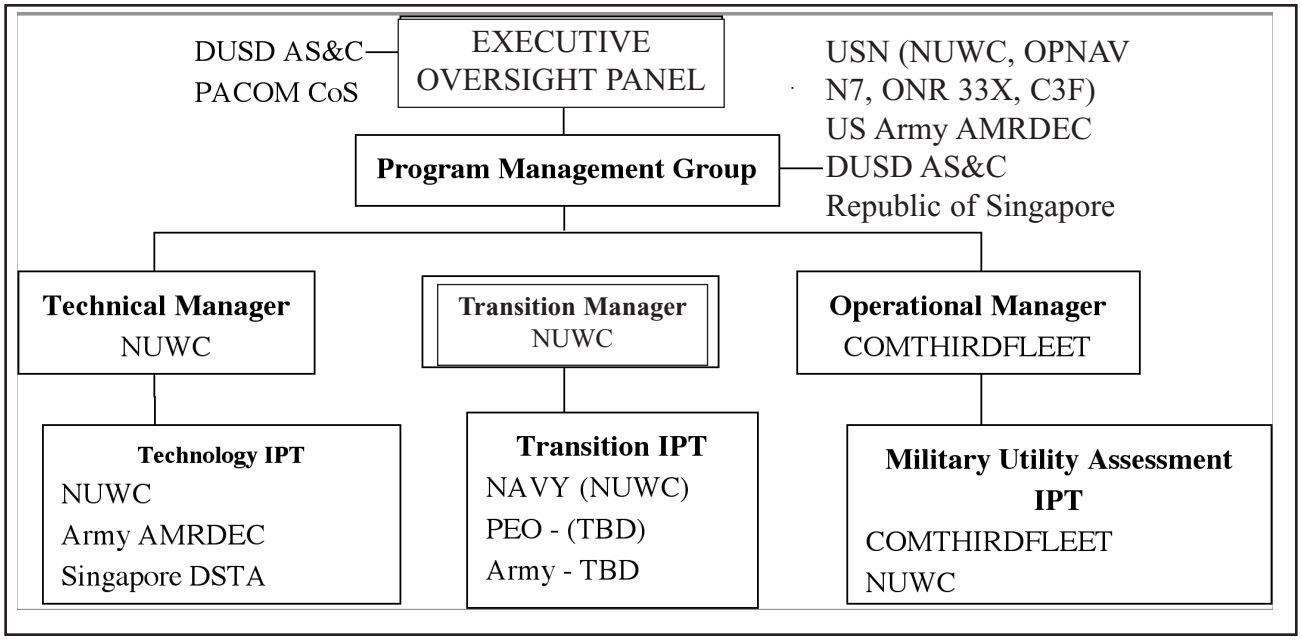

Figure 9-39: SPARTAN Management Structure

The Executive Oversight Panel meets annually to review program status and provide guidance and decisions on executive level issues to include program funding, schedule and products. This panel is co-chaired by the Deputy Under Secretary of Defense (DUSD) for Advanced Systems and Concepts (AS&C) and the HQ USPACOM Chief of Staff.

The Program Management Group meets quarterly to review working-level issues regarding program management. This group is responsible for providing the Oversight Panel a semi-annual SPARTAN ACTD status report. It also provides oversight management of the SPARTAN ACTD IPTs. Panel members include the program Technical, Operational and Transition Managers and representatives from those agencies that provide program funding. The Program Management Group provides input to the following program management issues:

- Validating Program Documentation (Management Plan, Functional Requirements Document (FRD), Demonstration and Evaluation

Plans, Integrated Assessment Plan, MUA Report, etc)

- Identifying, coordinating and resolving programmatic issues such as funding, schedules, scope and demonstration/assessment.

Organizations participating as members of the Program Management Group are:

- NUWC as TM and XM
- COMTHIRDFLEET as OM
- OPNAV N76
- ONR 33X
- Army AMRDEC
- Republic of Singapore
- DUSD AS&C

Naval Undersea Warfare Center is the Technical Manager (TM), and as such is responsible for all programmatic coordination activities for successful implementation of this ACTD. The TM:

- Provides SPARTAN program management
- Coordinates all SPARTAN funding sources
- Primary interface with DUSD (AS&C), USPACOM, COMTHIRDFLEET (OM), USA, and the Republic of Singapore
- Coordinates development activities including leading the Technology IPT
- Facilitates coordination between developers and operators to ensure SPARTAN products satisfy the Functional Requirements Document in order to answer the SPARTAN COI
- Provides training resources and support associated with use of program technologies

On behalf of Pacific Command (PACOM), the User Sponsor, Commander, Third Fleet (COMTHIRDFLEET) will serve as Operational Manager (OM). The US Army and Republic of Singapore Navy (RSN) will work with the OM in developing joint and coalition CONOPS, as well as participating in the IAP development and conduct of the MUA. The OM:

- Evaluates SPARTAN technology to determine military utility
- Coordinates activities and leads the Military Utility Assessment IPT
- Develops and publishes the SPARTAN Functional Requirements Document
- Coordinates all activities necessary for conducting developmental evaluations and operational assessments of the SPARTAN products within the PACOM area of responsibility (AOR)
- Writes the CONOPS, IAP, and formal MUA report and briefs the findings to the Executive Oversight Panel prior to the completion of the ACTD demonstration phase.

There are three SPARTAN IPTs that will meet on an as-required basis to manage specific program functions. These IPTs include: Technology,

Military Utility Assessment, and Transition. Each IPT Chair is responsible for reporting issues, identifying and resolving conflicts and forwarding unresolved conflicts (with recommendations for resolution) arising from IPT sessions to the Program Management Group via their respective managers.

NUWC is the overall XM and will develop transition strategies with a NAVSEA Program Manager, contingent upon the determination to proceed to production. Candidate Program Managers are PEO S (PMS500), PEO TSC (PMS400), PEO MUW (PMS411, PMS490, and PMS210.) Other Program Managers may become apparent as the ACTD progresses. The XM:

- Develops a Master Transition Plan
- Coordinates with other CINC, Service and Agency development efforts
- Identifies key programmatic dependencies
- Develops and submits budget issues
- Coordinates joint usage and acquisition activities
- Reviews evaluation and assessment reports
- Reports consolidated transition results to the OM

SPARTAN ACTD points of contact are:

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